

CLAIMS

What is claimed is:

1. An optical package having a length of optical fibers connected to the package, comprising:
 - an enclosure having at least one optical component disposed therein, the component defining a plane and being optically connected to the length of optical fibers; and
 - an opening defined by at least one wall of the enclosure,wherein a segment of the length of optical fibers is disposed within the opening such that a plane defined by the segment is angled relative to the plane defined by the component.
2. The package of claim 1 wherein the enclosure comprises a mounting base which defines a plane such that the plane defined by the segment is perpendicular to the plane defined by the mounting base.
3. The package of claim 1 wherein the plane defined by the segment is perpendicular to the plane defined by the component.
4. The package of claim 1 further comprising a support attached to the enclosure and configured to support the segment of the length.
5. The package of claim 4 wherein the support comprises a clamp having a clamping face which is parallel to the segment of the length.
6. The package of claim 5 wherein a shape of the clamping face is selected from the group consisting of flat surfaces and curved surfaces.
7. The package of claim 5 wherein the clamp further comprises a compliant material disposed upon the clamping face.

8. The package of claim 7 wherein the compliant material comprises rubber.

9. The package of claim 7 wherein the compliant material comprises a thickness of about 0.030 in.

10. The package of claim 1 further comprising a feedthrough disposed within the opening and supporting the segment of the length.

11. The package of claim 10 wherein the feedthrough comprises a material selected from the group consisting of aluminum, aluminum alloys, and other metals.

12. The package of claim 10 further comprising a protective boot disposed over the feedthrough.

13. The package of claim 12 wherein the protective boot comprises a polymer selected from the group consisting of thermoset and thermoplastic polymers.

14. The package of claim 12 wherein the protective boot comprises a polymer selected from the group consisting of santoprene, neoprene, and ethylene propylene diene monomer.

15. The package of claim 1 further comprising a sealant disposed within a gap defined by the opening and the segment of the length.

16. The package of claim 15 wherein the sealant comprises an adhesive selected from the group consisting of anhydride epoxy, epoxy, silicone rubber, polymer adhesive, and solder.

17. The package of claim 1 further comprising a plate disposed within the opening and upon which the segment of the length is attached.

18. The package of claim 17 wherein the plate and the segment of the length are soldered together.

19. The package of claim 1 wherein the segment of the length of optical fibers is disposed within the opening such that a non-bending length of the optical fibers exterior to the opening is minimized.

20. The package of claim 19 wherein a bending radius of the length of optical fibers exterior to the opening is about 1.0 inch.

21. The package of claim 19 wherein the non-bending length of the optical fibers exterior to the opening is about 0.1 inch.

22. The package of claim 1 wherein the length of optical fibers has a cross-section selected from the group consisting of ovals, ellipses, and rectangles.

23. The package of claim 1 wherein the length of optical fibers comprise a ribbon of optical fibers.

24. A method of routing a length of optical fibers through a wall of a package comprising:

providing at least one optical component disposed within the package to which an end of the length of optical fibers is to be attached, the component defining a plane; and,

routing the length of optical fibers through an opening defined in a wall of the package such that a plane defined by a segment of the length disposed within the opening is angled relative to the plane defined by the component.

25. The method of claim 24 further comprising securing the length of optical fibers to the package.

26. The method of claim 25 wherein securing the length of optical fibers to the package comprises clamping the length between at least two clamping members.

27. The method of claim 26 wherein the clamping members comprise a shape selected from the group consisting of flat surfaces and curved surfaces.

28. The method of claim 24 further comprising sealing a gap defined between the opening and the segment of the length.

29. The method of claim 28 wherein the gap is sealed with an adhesive selected from the group consisting of anhydride epoxy, epoxy, silicone rubber, polymer adhesive, and solder.

30. The method of claim 24 further comprising attaching the segment of the length to a reinforcement plate prior to routing the length of optical fibers through the opening.

31. The method of claim 30 wherein the reinforcement plate comprises a material selected from the group consisting of Kovar, Invar, and Alloy 42.

32. The method of claim 24 further comprising:
supporting the segment of the length with at least one feedthrough disposed within the opening; and
filling a cavity defined in the feedthrough with an adhesive.

33. The method of claim 32 further comprising curing the adhesive.

34. The method of claim 24 further comprising bending a portion of the length of optical fibers exterior to the opening such that the portion of the length between the bent portion and the opening is minimized.

35. The method of claim 34 wherein a bending radius of the bent portion is about 1.0 inch.

36. The method of claim 34 wherein the length of the optical fibers between the bent portion and the opening is about 0.1 inch.

37. The method of claim 24 wherein the plane defined by the segment of the length disposed within the opening is perpendicular to the plane defined by the component.

38. The method of claim 24 wherein the length of optical fibers has a cross-section selected from the group consisting of ovals, ellipses, and rectangles.

39. The method of claim 24 wherein the length of optical fibers comprise a ribbon of optical fibers.